IN THE TITLE:

Please amend the title of the invention to read as follows:

--IMAGE PROCESSING APPARATUS HAVING VARIABLE OUTPUT, METHOD, PHOTOGRAPHING SYSTEM, CONTROLLING METHOD FOR THE SYSTEM, AND COMPUTER-READABLE MEMORY HAVING THE SAME--.

IN THE CLAIMS:

Please cancel Claims 1-38 without prejudice to or disclaimer of the subject matter recited therein.

Please add Claims 68-111 as follows. Please note that all claims currently pending in this application are being reproduced below for the Examiner's convenience regardless of whether the claim is being amended.

1-38. (Cancelled)

39. (Withdrawn) An image processing apparatus characterized by comprising:

acquisition means for specifying a to-be-output area of an image represented by image data as an output image and acquiring a size of the output image;

selection means for selecting, on the basis of the size of the output image acquired by said acquisition means, one image output size from a plurality of types of image output sizes set in advance;

layout determination means for determining a layout of the output image in an output area having the image output size selected by said selection means;

display means for displaying on the basis of a layout state determined by said layout-determination means; and

change means for changing the layout state of the output image in the output area in accordance with an instruction for changing the layout state displayed by said display means.

40. (Withdrawn) The apparatus according to claim 39, characterized in that said display means reduces the output area and the output image and displays the output image in the layout state determined by said layout determination means.

41. (Withdrawn) The apparatus according to claim 39, characterized in that said display means overlays, in accordance with the layout state, an image obtained by reducing an image representing the output area on an image obtained by reducing the image represented by the image data and displays the layout state.

42. (Withdrawn) The apparatus according to claim 39, characterized by further comprising output means for outputting the output image to an output medium having the output area on the basis of a final layout state determined by said layout determination means and said change means.

43. (Withdrawn) The apparatus according to claim 39, characterized in that said selection means selects an output area with an image output size having a minimum residual area, within which the entire output image falls.

44. (Withdrawn) The apparatus according to claim 43, characterized in that said selection means selects an output area having an output size assuming that the entire output image falls within the output size as long as a outstretch amount of the output image from the output size falls within a predetermined range, and removes the outstretch portion from the output image.

45. (Withdrawn) The apparatus according to claim 39, characterized by further comprising reduction means for, when no appropriate output area is obtained by said selection means, reducing the output image such that the output image falls within a predetermined output area.

46. (Withdrawn) The apparatus according to claim 39, characterized by further comprising deletion means for, when no appropriate output area is obtained by said selection means, deleting a outstretch portion of the output image from a predetermined output area.

47. (Withdrawn) The apparatus according to claim 39, characterized by further comprising extraction means for, when no appropriate output area is obtained by

said selection means, displaying the output image overlaid on a predetermined output area and extracting a desired area from the output image by user's operation.

48. (Withdrawn) The apparatus according to claim 39, characterized in that said display means displays the entire image represented by the image data, a range of the output image, and the output area in an identifiable state.

49. (Withdrawn) The apparatus according to claim 39, characterized in that said display means displays the entire image represented by the image data, the output area specified by said acquisition means, and an output area to be actually output in an identifiable state.

50. (Withdrawn) The apparatus according to claim 39, characterized in that the image data represents an X-ray digital image obtained by X-ray irradiation, and

the output image specified by said acquisition means is an image of an area specified by recognizing an irradiation field in the X-ray digital image.

51. (Withdrawn) The apparatus according to claim 50, characterized in that the plurality of types of output sizes correspond to a plurality of film sizes, respectively, and

said apparatus further comprises output means for extracting the output image and outputting the output image to a film having the output area on the basis of a final layout state determined by said layout determination means and said change means.

52. (Withdrawn) The apparatus according to claim 45, characterized by further comprising

output means for outputting the output image to an output medium having the output area on the basis of a final layout state determined by said layout determination means and said change means, and

addition means for, when the output image is reduced by said reduction means, adding one of a symbol and a character representing reduction.

53. (Withdrawn) An image processing method characterized by comprising:

the acquisition step of specifying a to-be-output area of an image represented in image data as an output image and acquiring a size of the output image;

the selection step of selecting, on the basis of the size of the output image acquired in the acquisition step, one image output size from a plurality of types of image output sizes set in advance;

the layout determination step of determining a layout of the output image in an output area having the image output size selected in the selection step;

the display step of displaying on the basis of a layout state determined in the layout determination step; and

the change step of changing the layout state of the output image in the output area in accordance with an instruction for changing the layout state displayed in the display step.

54. (Withdrawn) The method according to claim 53, characterized in that the display step comprises reducing the output area and the output image and displaying the output image in the layout state determined in the layout determination step.

55. (Withdrawn) The method according to claim 53, characterized in that the display step comprises overlaying, in accordance with the layout state, an image obtained by reducing an image representing the output area on an image obtained by reducing the image represented by the image data and displaying the layout state.

56. (Withdrawn) The method according to claim 53, characterized by further comprising the output step of outputting the output image to an output medium having the output area on the basis of a final layout state determined in the layout determination step and the change step.

57. (Withdrawn) The method according to claim 53, characterized in that the selection step comprises selecting an output area with an image output size having a minimum residual area, within which the entire output image falls.

58. (Withdrawn) The method according to claim 57, characterized in that the selection step comprises selecting an output area having an output size assuming that the entire output image falls within the output size as long as a outstretch amount of the output image from the output size falls within a predetermined range, and removing the outstretch portion from the output image.

59. (Withdrawn) The method according to claim 53, characterized by further comprising the reduction step of, when no appropriate output area is obtained in the selection step, reducing the output image such that the output image falls within a predetermined output area.

60. (Withdrawn) The method according to claim 53, characterized by further comprising the deletion step of, when no appropriate output area is obtained in the selection step, deleting a outstretch portion of the output image from a predetermined output area.

61. (Withdrawn) The method according to claim 53, characterized by further comprising the extraction step of, when no appropriate output area is obtained in the selection step, displaying the output image overlaid on a predetermined output area and extracting a desired area from the output image by user's operation.

62. (Withdrawn) The method according to claim 53, characterized in that the display step comprises displaying the entire image represented by the image data, a range of the output image, and the output area in an identifiable state.

63. (Withdrawn) The method according to claim 53, characterized in that the display step comprises displaying the entire image represented by the image data, the output area specified in the acquisition step, and an output area to be actually output in an identifiable state.

64. (Withdrawn) The method according to claim 53, characterized in that the image data represents an X-ray digital image obtained by X-ray irradiation, and

the output image specified in the acquisition step is an image of an area specified by recognizing an irradiation field in the X-ray digital image.

65. (Withdrawn) The method according to claim 64, characterized in that the plurality of types of output sizes correspond to a plurality of film sizes, respectively, and

the method further comprises the output step of extracting the output image and outputting the output image to a film having the output area on the basis of a final layout state determined in the layout determination step and the change step.

66. (Withdrawn) The method according to claim 59, characterized by further comprising

the output step of outputting the output image to an output medium having the output area on the basis of a final layout state determined in the layout determination step and the change step, and the

addition step of, when the output image is reduced in the reduction step, adding one of a symbol and a character representing reduction.

67. (Withdrawn) A storage medium which storing a control program for causing a computer to control an output image size, characterized in that the control program comprises:

a code of the acquisition step of specifying a to-be-output area of an image represented in image data as an output image and acquiring a size of the output image;

a code of the selection step of selecting, on the basis of the size of the output image acquired in the acquisition step, one image output size from a plurality of types of image output sizes set in advance;

a code of the layout determination step of determining a layout of the output image in an output area having the image output size selected in the selection step;

a code of the display step of displaying on the basis of a layout state determined in the layout determination step; and

a code of the change step of changing the layout state of the output image in the output area in accordance with an instruction for changing the layout state displayed in the display step.

Please add New Claims 68-111 as follows:

--68. (New) An image processing system for processing image data obtained by computerizing an input image and outputting the image data to an output medium, said system comprising:

designation means for designing an observation area in the image data;

selection means for selecting one appropriate output medium type from a plurality of output media types based on the observation area designated by said designation means; and

changing means for changing output method when said selection means cannot select an appropriate output medium type.

69. (New) The system according to claim 68, wherein the image data are obtained by irradiating an object with an X-ray generated by an X-ray generation apparatus, and

wherein the observation area is set on the basis of an X-ray irradiation stop said X-ray generation apparatus.

70. (New) The system according to claim 69, wherein the observation area is set on the basis of an irradiation area of the X-ray generated by the X-ray generation apparatus, which is extracted from the image.

71. (New) The system according to claim 68, wherein the observation area is set on the basis of an organ in the image.

72. (New) The system according to claim 68, wherein said selection means selects an appropriate output medium type from the plurality of output medium types based on an aspect ratio of the observation area.

73. (New) The system according to claim 68, wherein said selection means selects an appropriate output medium type based on whether or not the observation area falls within an effective image area of the selected medium type.

74. (New) The system according to claim 68, wherein said changing means includes a life-size output method where an observation area is outputted in actual size, a reduced image output method where an observation area is reduced and then outputted, an extraction output method where a predetermined area is extracted from an observation area and then outputted, and a segmenting output method where an observation area is segmented into a plurality of segmentation areas and outputted to a plurality of output media.

75. (New) The system according to claim 74, wherein said changing means changes the output method from the life-size output method to one of the reduced image output method, the extraction output method and the segmenting output method, when said selection means cannot select an appropriate output medium.

76. (New) An image processing system for processing image data obtained by computerizing an input image and outputting the image data to an output medium, said apparatus comprising:

designation means for designating an observation area in the image data;

selection means for selecting one of a plurality of output media types; and

changing means for changing output method based on a relationship between size of the designated observation area and size of the output medium type selected by said selection means.

77. (New) The system according to claim 76, wherein said changing means changes an output method based on whether or not the observation area falls within an effective image area of the selected output medium type.

78. (New) The system according to claim 76, wherein said changing means includes a life-size output method where an observation area is outputted in actual size, a reduced image output method where an observation area is reduced and then outputted, an extraction output method where a predetermined area is extracted from an observation area and then outputted, and a segmenting output method where an observation area is segmented into a plurality of segmentation areas and outputted to a plurality of output media.

79. (New) The system according to claim 78, wherein said changing means changes the output method from the life-size output method to one of the reduced image output method, the extraction output method and the segmenting output method, when said selection means can not select an appropriate output medium.

80. (New) An image processing system for processing image data obtained by computerizing an input image and outputting the image data to an output medium, said system comprising:

designation means for designating an observation area in the image data; and

selection means for selecting, after an observation area is designated by said designation means, one appropriate output medium type from a plurality of output medium types based on the observation area designated by said designation means.

81. (New) The system according to claim 80, wherein the image data are obtained by irradiating an object with an X-ray generated by an X-ray generation apparatus, and

wherein the observation area is set on the basis of an X-ray irradiation stop said X-ray generation apparatus.

82. (New) The system according to claim 81, wherein the observation area is set on the basis of an irradiation area of the X-ray generated by the X-ray generation apparatus, which is extracted from the image.

83. (New) The system according to claim 80, wherein the observation area is set on the basis of an organ in the image.

84. (New) The system according to claim 80, wherein said selection means selects an appropriate output medium type from the plurality of output medium types based on an aspect ratio of the observation area.

85. (New) The system according to claim 80, wherein said selection means selects an appropriate output medium type based on whether or not the observation area falls within an effective image area of the selected medium type.

86. (New) An image processing method for processing image data obtained by computerizing an input image and outputting the image data to an output medium, said method comprising:

a designation step of designating an observation area in the image data;

a selection step of selecting one appropriate output medium type from a plurality of output medium types based on the observation area designated in said designation step; and

a changing step of changing output method when said selection step cannot select an appropriate output medium type.

87. (New) The method according to claim 86, wherein the image data are obtained by irradiating an object with an X-ray generated by an X-ray generation apparatus, and

wherein the observation area is set on the basis of an X-ray irradiation stop of the X-ray generation apparatus.

88. (New) The method according to claim 87, wherein the observation area is set on the basis of an irradiation area of the X-ray generated by said X-ray generation apparatus, which is extracted from the image.

89. (New) The method according to claim 86, wherein the observation area is set on the basis of an organ in the image.

90. (New) The method according to claim 86, wherein said selection step selects an appropriate output medium type from the plurality of output medium types based on an aspect ratio of the observation area.

91. (New) The method according to claim 86, wherein said selection step selects an appropriate output medium type based on whether or not the observation area falls within an effective image area of the selected medium type.

92. (New) The method according to claim 86, wherein the changing step includes a life-size output method where an observation area is outputted in actual size, a reduced image output method where an observation area is reduced and then outputted, an extraction output method where a predetermined area is extracted from an observation area and then outputted, and a segmenting output method where an observation area is segmented into a plurality of segmentation areas and outputted to a plurality of output media.

93. (New) The method according to claim 92, wherein the changing step changes the output method from the life-size output method to one of the reduced image output method, the extraction output method and the segmenting output method, when the selection step cannot select an appropriate output medium.

94. (New) An image processing method for processing image data obtained by computerizing an input image and outputting the image data to an output medium, said method comprising:

a designation step of designating an observation area in the image data;

a selection step of selecting one of a plurality of output medium types; and

a changing step of changing output method based on a relationship between size of the designated observation area and size of the output medium type selected in said selection step.

95. (New) The method according to claim 94, wherein said changing step changes an output method based on whether or not the observation area falls within an effective image area of the selected output medium type.

96. (New) The method according to claim 94, wherein said changing step includes a life-size output method where an observation area is outputted in actual size, a reduced image output method where an observation area is reduced and then outputted, an extraction output method where a predetermined area is extracted from an observation area and then outputted, and a segmenting output method where an observation area is segmented into a plurality of segmentation areas and outputted to a plurality of output media.

97. (New) The method according to claim 96, wherein said changing step changes the output method from the life-size output method to one of the reduced image

output method, the extraction output method and the segmenting output method, when said selection step can not select an appropriate output medium.

98. (New) An image processing method for processing image data obtained by computerizing an input image and outputting the image data to an output medium, said method comprising:

a designation step of designing an observation area in the image data; and

a selection step of selecting, after an observation area is designated in said designation step, one appropriate output medium type from a plurality of output medium types based on the observation area designated in said designation step.

99. (New) The method according to claim 98, wherein the image data are obtained by irradiating an object with an X-ray generated by an X-ray generation apparatus, and

wherein the observation area is set on the basis of an X-ray irradiation stop of the X-ray generation apparatus.

100. (New) The method according to claim 99, wherein the observation area is set on the basis of an irradiation area of the X-ray generated by the X-ray generation apparatus, which is extracted from the image.

101. (New) The method according to claim 98, wherein the observation area is set on the basis of an organ in the image.

102. (New) The method according to claim 98, wherein said selection step selects an appropriate output medium type from the plurality of output medium types based on an aspect ratio of the observation area.

103. (New) The method according to claim 98, wherein said selection step selects an appropriate output medium type based on whether or not the observation area falls within an effective image area of the selected medium type.

104. (New) A computer-readable memory storing program code for a computer to control an image processing system which processes image data obtained by computerizing an input image and outputs the image data to an output medium, comprising:

program code for a designation step of designating an observation area in the image data; and

program code for a selection step of selecting, after an observation area is designated in the designation step, one appropriate output medium type from a plurality of output medium types based on the observation area designated in the designation step.

105. (New) A photographing system for photographing an object and outputting image data to an output medium based on photographed object image, said system comprising:

photographing means for photographing an object and obtaining image data representing photographed object image;

designation means for designating an observation area in the image data;

selection means for selecting one appropriate output medium type from a plurality of output media types based in the observation area designated by said designation means; and

changing means for changing output method when said selection means cannot select an appropriate output medium type.

106. (New) A photographing system for photographing an object and outputting image data to an output medium based on photographed object image, said system comprising:

photographing means for photographing an object and obtaining image data representing photographed object image;

designation means for designating an observation area in the image data;

selection means for selecting one of a plurality of output medium types; and

changing means for changing output method based on a relationship between size of the designated observation area and size of the output medium type selected by said selection means.

107. (New) A photographing system from photographing an object and outputting image data to an output medium based on photographed object image, said system comprising:

photographing means for photographing an object and obtaining image data representing photographed object image;

designation means for designating an observation area in the image data; and

selection means for selecting, after an observation area is designated by said designation means, one appropriate output medium type from a plurality of output medium types based on the observation area designated by said designation means.

108. (New) A control method of controlling a photographing system for photographing an object and outputting image data to an output medium based on photographed object image, said method comprising:

a photographing step of photographing an object and obtaining image data representing photographed object image;

a designation step of designating an observation area in the image data;

a selection step of selecting one appropriate output medium type from a plurality of output medium types based on the observation area designated in the designation step; and

a changing step of changing output method when the selection step cannot select an appropriate output medium type.

109. (New) A control method of controlling a photographing system for photographing an object and outputting image data to an output medium based on photographed object image, said method comprising:

a photographing step of photographing an object and obtaining image data representing photographed object image;

a designation step of designating an observation area in the image data;

a selection step of selecting one of a plurality of output medium types; and

a changing step of changing output method based on a relationship between size of the designated observation area and size of the output medium type selected in said selection step.

110. (New) A control method of controlling a photographing system for photographing an object and outputting image data to an output medium based on photographed object image, said method comprising:

a photographing step of photographing an object and obtaining image data representing photographed object image;

a designation step of designating an observation area in the image data; and

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a selection step of selecting, after an observation area in designating on the designation step, one appropriate output medium type from a plurality of output medium types based on the observation area designated in said designation step.

111. (New) A computer-readable memory storing program code for a computer to control a photographing system for photographing an object and outputting image data to an output medium based on photographed object image, comprising:

program code for a photographing step of photographing an object and obtaining image data representing photographed object image;

program code for a designation step of designating an observation area in the image data; and